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Abstract

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New Worlds Discoverer Occulter Performance

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We present an overview of the performance of the New Worlds Discoverer occulter. New Worlds Discoverer is a multi-petal occulter working in conjunction with a space telescope to enable direct detection of exo-planets by extinguishing on-axis starlight. Very few constraints are placed on the telescope, and we describe the operation of NWD with a "generic" telescope. We give an overview of the physics of the occulter, including discussions of the occulter geometry and its effects on inner working angle and resulting starlight suppression. Factors affecting occulter performance are discussed, including: occulter size, telescope-occulter separation, number of occulter petals, and petal apodization. We also include discussions of the occulter's tolerance to alignment errors, tilt, and metrology.